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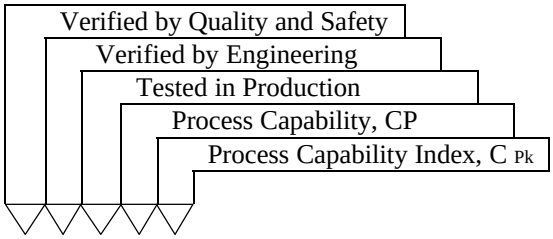


1. SCOPE

The purpose of this document is to specify the functional requirements of a 60W continuous, dual input (110/220 VAC with auto range), SINGLE output switching power supply in a open frame board mount package.

2. CONNECTIONS

The following will specify the input and output connections provided by the power supply.

2.1 INPUT CONNECTOR
Molex 3 position, 0.156 center header

2.2 OUTPUT CONNECTOR
Molex 6 position 0.156 center header

2.3 PIN ASSIGNMENTS

INPUT (J1)	OUTPUT (J2)	OUTPUT (J2)
Pin 1 – L1	Pins 1-2, V1	Pin 6, N/A
Pin 3 – L2	Pins 3-4, Gnd	Pin 5, N/A

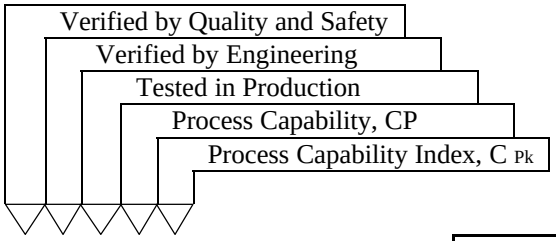
3. ELECTRICAL REQUIREMENTS

This section defines the electrical requirements for the power supply unit.

3.1	INPUT The operating conditions for the AC input are described in this section.
3.1.1	INPUT VOLTAGE The operating range is: 90-132 VAC/180-264 VAC, single phase.
3.1.2	INPUT CURRENT When the input voltage is 90VAC at 60W, then the max input current shall be 1.4A.
3.1.3	INPUT FREQUENCY Input frequency range shall be 47 – 63 Hz.
3.1.4	INRUSH CURRENT Maximum inrush shall be 45A at 240VAC.
3.1.5	EFFICIENCY The efficiency of the power supply is 87% typical. Measured at 12V @ 5 Amps with 230 VAC input. Measurement is taken at PWB output connector pads at 25°C ambient with 5 minute warm up.
3.2	OUTPUT The operating conditions for the DC output are described in this section.
3.2.1	OUTPUT POWER The power supply will provide 12V output. The continuous output power is 60W.
3.2.2	OUTPUT VOLTAGE Initial setting tolerance is measured with 50% of maximum load, with line voltage set at nominal. The voltage and initial setting tolerance of the output will be provided as follows:

OUTPUT	NOMINAL VOLTAGE	INITIAL SET TOLERANCE
+Vout(1)	+12VDC	± 3 %

3.2.3	OUTPUT CURRENT Total output power not to exceed 60W free air convection. Rating of output currents are listed as follows:



OUTPUT	MIN. OUTPUT CURRENT	MAX. OUTPUT CURRENT
+Vout(1)	0.1A	5A

						3.2.4	OUTPUT REGULATION
						3.2.4.1	LINE REGULATION Measured by varying the line voltage from 90 - 132VAC/180 - 264VAC.

OUTPUT	TOLERANCE
+Vout(1)	0.3%

						3.2.4.2	LOAD REGULATION Measured by varying the load current from MIN to MAX load at nominal AC input voltage. Measured at motherboard, 500 ms settling time.

OUTPUT	TOLERANCE
+Vout(1)	± 0.5 %

						3.2.5	OUTPUT RIPPLE AND NOISE VOLTAGE The maximum allowable ripple and noise at nominal AC input are as follows: (5 minute warm up with 47uf bypass at measurement point.)

OUTPUT	mV
+Vout(1)	120

						3.2.6	OUTPUT TRANSIENT RESPONSE The load current of measured output is changed from 50% to 100%. The recovery time is measured when the output voltage has recovered to within 1% of the load regulation band.

OUTPUT	RECOVERY TIME	MAXIMUM EXCURSION
+Vout(1)	5 ms	10%

						3.2.7	OUTPUT VOLTAGE DRIFT Long-term output voltage drift over 1000 hours of the Vout(1) output operation is typically 0.5%.
						3.2.8	OUTPUT OVERSHOOT The overshoot voltage as a percentage of nominal output voltage at start-up is as follows: I OUT = 2 Amps.

OUTPUT	OVERSHOOT
+Vout(1)	10%

						3.2.9	OUTPUT PROTECTION The power supply will be provided with protection against any fault condition described below and will self-recover with a maximum restart of 6 seconds after the fault condition is removed.

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						3.2.9.1	OVERVOLTAGE N/A
						3.2.9.2	OVER CURRENT PROTECTION Typically 130% of maximum current.
						3.2.9.3	OUTPUT SHORT CIRCUIT The power supply will be protected against output short circuit. RMS short circuit shall be less than 0.5 A RMS under all conditions. Output voltage of less than 0.5V constitutes a short.
						3.2.10	RISE TIME The rise time from 10% to 90% of output voltage is a maximum of:

OUTPUT	RISE TIME
+Vout(1)	100 mS

						3.2.11	TURN-ON DELAY The turn-on delay time of the main output after AC power is applied from a cold condition is 4.0 seconds MAX at 115 VAC.
						3.2.12	OUTPUT HOLD-UP TIME The power supply shall maintain the output within voltage/current specifications after loss of input power for 6 milliseconds typically at full rated load and at nominal AC input voltage (115VAC). Measured at minimum V set point.
						3.2.13	REMOTE SENSE N/A
						3.2.14	POWER FAIL N/A
						3.2.15	TEMPERATURE COEFFICIENT Temperature coefficient over entire operating temperature range of 0ºC to 40ºC after one-hour warm-up will be as follows, measured on V1 only:

OUTPUT	COEFFICIENT
+Vout(1)	2.4mV/°C

4. ENVIRONMENTAL REQUIREMENTS

						4.1	TEMPERATURE Operating temperature range: 0ºC to 50ºC at the full rated output power. Non-operating temperature range: -40ºC to +85ºC.
						4.2	ALTITUDE Maximum operating altitude: 10,000 feet. Maximum Non-operating altitude: 40,000 feet.
						4.3	HUMIDITY Non-condensing relative humidity range: 5% to 95%.
						4.4	VIBRATION The power supply shall meet operating and non-operating vibration, 5-9Hz, 2G PK, 0.5 oct./min, 2 cycles; 9-500Hz 0.5 oct./min, 2 cycles.
						4.5	INPUT TRANSIENT SUSCEPTIBILITY The unit shall comply to the requirements of IEC 1000-4-2, 1000-4-4 and IEC 1000-4-5.
						4.6	THERMAL DERATING Derate linearly from 50ºC to 70ºC at 1.33W/ºC from 60W with free air convection.

5. SAFETY REQUIREMENTS

						5.1	DIELECTRIC WITHSTAND VOLTAGE Minimum dielectric withstand voltage: Input to output - 2121VDC / minute.

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						5.2	INSULATION RESISTANCE Minimum insulation resistance: Input to output - 7 mega ohm.	
						5.3	LEAKAGE CURRENT Leakage current per IEC 950 shall be 1000uA maximum.	
						5.4	SAFETY SPACINGS The PCB spacing will comply with the Safety Standards per 5.5.	
						5.5	SAFETY STANDARDS The power supply will meet Class 1, SELV of the following safety agency requirements: IEC 950, EN60950, with the following deviations: VDE. UL 1950 (Recognized Component) C-UL (Canadian Approval by UL)	
						5.6	RELIABILITY	
							5.6.1	MTBF @ 25ºC shall be 100,000 hours minimum.

6. EMI REQUIREMENTS

The power supply shall comply to the limits CISPR 55022 and CISPR 55014, Level B (at 230 VAC and 115 VAC). FCC 47 CFR Part 15, Level B (115 VAC)

7. APPLICABLE DOCUMENTS

Audit Test Program
Production 1 Test Program
Production 2 Test Program
QC Test Program

8. MECHANICAL

8.1 WEIGHT
8.1.1 Board and Heatsink: 6oz. MAX
8.2 DIMENSIONS
8.2.1 Board and Heatsink: